

IN THE CLAIMS:**Please amend the Claims as follows:**

1. (Currently amended) A monitoring system comprising:
at least one partial discharge (PD) sensor, which is configured to monitor a component of an aircraft wiring system and to acquire a monitoring signal, wherein said PD sensor comprises a capacitive coupling sensor, which includes a conductive layer encompassing the component.

2. (Cancelled)

3. (Currently amended) The monitoring system of Claim 2 1, wherein the component comprises a conductive core surrounded by an insulating layer, wherein said capacitive coupling sensor further includes a capacitance enhancing layer which extends around the insulating layer, and wherein said conductive layer extends around said capacitance enhancing layer.

4. (Currently amended) The monitoring system of Claim 2 1, wherein the component comprises a plurality of wires, each wire comprising a conductive core surrounded by an insulating layer, wherein said capacitive coupling sensor further includes a capacitance enhancing layer which extends around the wires, and wherein said conductive layer extends around said capacitance enhancing layer.

5. (Currently amended) ~~The A~~ monitoring system ~~of Claim 1~~ comprising at least one partial discharge (PD) sensor, which is configured to monitor a component of an aircraft wiring system and to acquire a monitoring signal, wherein said PD sensor comprises a high frequency current transformer (HFCT) sensor encompassing the component, and wherein said HFCT sensor comprises a plurality of conductive leads formed on a substrate and a cap covering said leads and said substrate.

6. (Original) The monitoring system of Claim 5, wherein the component comprises a conductive core surrounded by an insulating layer, and wherein said HFCT sensor extends around the insulating layer.

7. (Original) The monitoring system of Claim 5, wherein the component comprises a plurality of wires, each wire comprising a conductive core surrounded by an insulating layer, wherein said HFCT sensor extends around the wires.

8. (Cancelled)

9. (Currently amended) The A monitoring system of Claim 8 comprising a monitoring unit that includes at least one partial discharge (PD) sensor, which is configured to monitor a component of an aircraft wiring system and to acquire a monitoring signal, wherein said monitoring unit comprises an in-line monitoring unit, wherein the component comprises a first wire set including at least one wire, a first connector connected to the first wire set, a second wire set including at least one wire, and a second connector connected to the second wire set, and wherein said in-line monitoring unit is positioned between the first and second connectors.

10. (Original) The monitoring system of Claim 9, wherein said in-line monitoring unit is configured to matingly connect to the first and second connectors.

11. (Currently amended) The monitoring system of Claim 8 5, further comprising a monitoring unit which includes said PD sensor, wherein said monitoring unit comprises a self-monitoring unit, wherein the component comprises a wire set, which includes at least one wire and is connected to said self-monitoring unit, and wherein said PD sensor is configured to monitor the wire.

12. (Currently amended) The monitoring system of Claim 8 5, further comprising:

a monitoring unit which includes said PD sensor;

a data acquisition system, which is configured to receive the monitoring signal; and

at least one hard-wired connector configured to connect said monitoring unit to said data acquisition system for conveying the monitoring signal.

13. (Currently amended) The monitoring system of Claim 8, 5 further comprising a monitoring unit which includes said PD sensor, wherein said monitoring unit further comprises a transmitter, which is configured to transmit the monitoring signal.

14. (Original) The monitoring system of Claim 13, further comprising a data acquisition system, which comprises:

a receiver, which is configured to receive the monitoring signal; and

a memory, which is configured to store the monitoring signal.

15. (Currently amended) The A monitoring system of Claim 13, comprising a monitoring unit that comprises:

at least one partial discharge (PD) sensor, which is configured to monitor a component of an aircraft wiring system and to acquire a monitoring signal,

a transmitter, which is configured to transmit the monitoring signal, and

~~wherein said monitoring unit further comprises~~ a partial discharge (PD) signal discriminator, which is configured to convert the monitoring signal to a multi-level monitoring signal, wherein said transmitter is configured to transmit the multi-level monitoring signal.

16. (Original) The monitoring system of Claim 15, further comprising a data acquisition system, which comprises:

a receiver, which is configured to receive the multi-level monitoring signal;

a memory, which is configured to store the multi-level monitoring signal; and

a monitor, which is configured to transmit an alert based on the multi-level monitoring signal.

17. (Original) The monitoring system of Claim 16, further comprising a display, which is configured to display a wire health status based on the multi-level monitoring signal.

18. (Currently amended) An on-board monitoring system comprising:
a plurality of monitoring units, each monitoring unit being configured to monitor a component of an aircraft wiring system and comprising at least one partial discharge (PD) sensor; and

a data acquisition system, which is configured to receive a plurality of monitoring signals from said monitoring units,

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wherein at least one of said monitoring units comprises an in-line monitoring unit, wherein the respective component comprises a first wire set including at least one wire, a first connector connected to the first wire set, a second wire set including at least one wire, and a second connector connected to the second wire set, and wherein said in-line monitoring unit is positioned between and matingly connects the first and second connectors.

19. (Cancelled)

20. (Cancelled)

21. (Currently amended) ~~The~~ An on-board monitoring system of ~~Claim 18~~ comprising:

a plurality of monitoring units, each monitoring unit being configured to monitor a component of an aircraft wiring system and comprising at least one partial discharge (PD) sensor; and

a data acquisition system, which is configured to receive a plurality of monitoring signals from said monitoring units,

wherein at least one of said monitoring units further comprises:

a partial discharge (PD) signal discriminator, which is configured to convert the monitoring signal to a multi-level monitoring signal, and

a transmitter, which is configured to transmit the multi-level monitoring signal, and

wherein said data acquisition system comprises:

a receiver, which is configured to receive the multi-level monitoring signal,

a memory, which is configured to store the multi-level monitoring signal, and

a monitor, which is configured to transmit an alert based on the multi-level monitoring signal.

22. (Original) The on-board monitoring system of Claim 21, wherein the respective component comprises a plurality of wires,

wherein said monitoring unit comprises a plurality of PD sensors and a plurality of PD signal discriminators, one PD signal discriminator being provided for a respective PD sensor,

wherein each of said PD sensors is configured to monitor a respective one of the wires,

wherein each of said PD signal discriminators is configured to convert each of the monitoring signals from a respective PD sensor to a respective multi-level monitoring signal, and

wherein said transmitter is configured to transmit each of the multi-level monitoring signals over a respective wireless channel.

23. (Original) The on-board monitoring system of Claim 21, further comprising:

at least one hard-wired connector configured to connect at least one of said monitoring units to said data acquisition system for conveying the monitoring signal.

24. (Currently amended) A method for monitoring an aircraft wiring system, said method comprising:

acquiring a plurality of monitoring signals for a plurality of components of the aircraft wiring system using a plurality of partial discharge (PD) sensors; and

conveying the monitoring signals from at least one of the PD sensors to a data acquisition system;

converting each of the monitoring signals to a multi-level monitoring signal,

wherein said conveying step comprises transmitting each of the respective multi-level monitoring signals over a respective wireless channel and receiving the multi-level monitoring signals,

wherein said method further includes:

storing the multi-level monitoring signals in a memory of the data acquisition system; and

transmitting an alert, if one of the multi-level monitoring signals indicates possible damage to the respective component .

25. (Cancelled)

26. (Currently amended) The method of Claim 25 24, further comprising displaying a wiring health status for the components based on the multi-level monitoring signals.

27. (Original) A method for on-board monitoring of an aircraft wiring system, said method comprising:

acquiring a plurality of monitoring signals for a respective plurality of components of the aircraft wiring system using a plurality of partial discharge (PD) sensors;

conveying the monitoring signals from at least one of the PD sensors to a data acquisition system;

converting each of the monitoring signals to multi-level monitoring signals,

conveying the multi-level monitoring signals to a data acquisition system;

storing the multi-level monitoring signals in a memory of the data acquisition system;

transmitting an alert, if one of the multi-level monitoring signals; indicates possible damage to the respective component; and

displaying a wiring health status for the components based on the multi-level monitoring signals.

28. (Currently amended) A monitoring system comprising:

a test interface, which is configured to matingly connect to a component of an aircraft wiring system, the component comprising a wire set, which includes a plurality of wires, and a connector connected to the wire set, said test interface comprising at least one partial discharge (PD) sensor, which is configured to monitor the component and acquire a monitoring signal, wherein said test interface further comprises an automated multiplexing test interface, which is configured to automatically monitor each of the wires using said PD sensor; and

a data acquisition system; which is configured to receive the monitoring signal.

29. (Original) The monitoring system of Claim 28, further comprising a display, which is configured to display the monitoring signal.

30. (Currently amended) The monitoring system of Claim 28, wherein ~~the component comprises a wire set including at least one wire and a connector connected to the wire set, and wherein~~ said test interface is configured to matingly connect to the connector.

31. (Cancelled)